

*Observations of Stars occulted by the Moon during the Eclipse of 1903 April 11 at the Radcliffe Observatory, Oxford.* By Arthur A. Rambaut, M.A., Sc.D., F.R.S., Radcliffe Observer.

At this observatory the following occultations of stars were observed on the occasion of the lunar eclipse which took place on the night of 1903 April 11. For these observations I employed the 18-inch guiding telescope of the new 24-inch photographic equatorial, Mr. Robinson being stationed at the 10-inch Barclay equatorial. On the 18-inch I was obliged to use the guiding breech-piece, with two slides at right angles to each other, which would have been very convenient with a low-power eyepiece, enabling me to get from one point of the Moon's limb to the other with great facility. But the advantage gained in this way was more than counterbalanced by the fact that the only eyepiece with which we are as yet furnished for this breech-piece is too high (257) for this class of observation, and gives rather a confined field of view.

The times of occultations observed by me were recorded on the chronograph, with which the new instrument is electrically connected, while Mr. Robinson's observations were made by the eye-and-ear method.

As a working list we took the list of stars published by Mr. Crommelin in *The Observatory* magazine for April 1903, p. 186, the times and angles as there given for Greenwich being corrected to adapt them for the Radcliffe Observatory, Oxford, by Chevallier's method (see *Memoirs, R.A.S.*, vol. xix. p. 231).

The clock-errors used in the reductions were found from chronographic transits for my observations, and from eye-and-ear transits for observations by Mr. Robinson. The longitude adopted in the determination of G.M.T. was  $5^m 2^s.6$  W.

The following are the observed times of the occultations :—

No. in Schönfeld Zone $-8^\circ$ .	Obs.	G.M.T. of Observation.			
		Disappearance.		Ref.	Reappearance.
		h	m	s	h m s
3537	AAR	...			11 10 17.4 (a)
3540	AAR	11	13	4.1 (b)	...
	R		4.3	(c)	12 26 39.1 (d)
3542	AAR	11	33	60.0 (e)	12 21 38.2
	R		58.8 $\pm$	(r)	...
3545	AAR	11	57	41.2 (g)	...
	R		40.9	(h)	...
3543 (fainter *)	AAR	12	4	21.8 (i)	...
	R		21.3	(j)	...
3543 (brighter *)	AAR	12	9	42.8 (k)	...
	R		42.5	(l)	12 40 47.8 (m)
3544	AAR	12	47	31.2 (n)	...
	R		31.0		12 55 53.7 (o)

May 1903.

*occulted by the Moon.*

399

*Instruments.*—Guiding telescope of 24-inch photographic refractor, aperture 18 inches. Power used, 257. Observations recorded on the chronograph. *Observer* : Dr. Rambaut (AAR).

Barclay Equatorial, aperture 10 inches. Wire micrometer : Power used, 88. Observations by the eye-and-ear method. *Observer* : Mr. Robinson (R).

*Observers' Remarks on the Occultations.*

- (a) Two or three seconds late. (b) Good.  
 (c) Instantaneous; good. Limb of Moon invisible.  
 (d) Instantaneous; good. (e) Good. Seemed to hang on limb.  
 (f) The star's faint image impinged 2" within the partially illuminated limb before disappearing. Observation rather difficult; time uncertain 1".  
 (g) Instantaneous; good. (h) Instantaneous; good.  
 (i) Good. A 10<sup>m</sup> star n.p. 3543.  
 (j) Instantaneous; good. Disappeared within limb. (k) Good.  
 (l) Instantaneous; good. (m) Good; instantaneous.  
 (n) Through clouds. Limb invisible; disappearance instantaneous.  
 (o) Good; instantaneous.  
 Clouds obscured the Moon after 12<sup>h</sup> 56<sup>m</sup> G.M.T.

*General Remarks on the Eclipse by Mr. Robinson.*

10<sup>h</sup> 48<sup>m</sup> G.M.T. Shadow very dense and of a smoky-brown tint. The limb in eclipse was invisible.

11<sup>h</sup> 45<sup>m</sup> G.M.T. The shadow less dense now, rendering the Moon's entire periphery visible.

When the eclipse had well advanced, the Earth's shadow was observed, both in the 2.7-inch "finder" and in the 10-inch, to have a distinct penumbral fringe of a uniform width of about 2'. This band was of a slaty colour.

In this connection the following remarks of a correspondent of Mr. Robinson's (Mr. Boden, of Ilkley) may be of interest :—

"Had a good visual observation of the recent eclipse, the weather being unusually propitious, and was quite delighted with the beauteous fringe of *sky-slate* shade seen in the telescope (power about 60, lunar disc nearly filling the field) bordering the umbra during the *greater* phases, but which disappeared giving place to a border of indistinct Indian-ink hue during an interval from just before to just after semi-eclipse. Did you notice this beautiful coloured penumbra at all in your larger instruments?"

*Radcliffe Observatory, Oxford:*  
 1903 May 6.